

AMENDMENTS TO THE CLAIMS

1(Currently amended). Process for the treatment of production crude comprising the following stages:

- (a) separation of the crude into ~~two phases, i.e.~~ gas and degassed emulsion phases, and
- (b) separation of the said degassed emulsion into water and oil,

in which stage (b) is implemented without recovery of a flow from the emulsion interface.

2(Original). Process according to claim 1, in which stage (b) comprises the substage (b1) of washing the said emulsion with water at the oil/water interface.

3(Currently amended). Process according to claim 1, in which stage (b) comprises substage (b2) of stripping with gas, ~~preferably an acid gas~~.

4(Currently amended). Process according to claim 1 ~~or 2~~, in which stage (b) comprises the substage (b3) of washing the said emulsion with water at the gas/oil interface.

5(Currently amended). Process according to ~~any of claims~~ claim 1 to 3, also comprising a stage (c) of settling the oil originating from stage (b).

6(Original). Process according to claim 1, in which stage (b) includes a settling operation.

7(Currently amended). Process according to ~~any of claims~~ claim 1 to 5, in which stage (b) comprises a stage of passing the degassed emulsion to the bottom of a washing vessel.

8(Currently amended). Process according to claim 7, which comprises using a water leg comprised from 3 to 15 meters, ~~preferably from 4 to 12 meters.~~

9(Currently amended). Process according to claim 7 ~~or 8~~, in which the degassed emulsion has a water content from 15 to 35 vol%.

10(Currently amended). Process according to ~~any of claims~~ claim 1 to 8, in which stage (a) comprises a substage (a1) of high or medium pressure separation and a stage (a2) of low pressure separation.

11(Currently amended). Process according to ~~any of claims~~ claim 1 to 10, in which stage (a) is implemented at a temperature of between 35 and 75°C, ~~advantageously between 45 and 65°C, especially between 45 and 50°C.~~

12(Currently amended). Process according to ~~any of claims~~ claim 1 to 11, in which the said stage (a) is implemented ~~during a residence time of~~ in less than 10 minutes, ~~preferably of between 3 and 8 minutes.~~

13(Currently amended). Process according to ~~any of claims~~ claim 1 to 12, in which stage (b) is implemented ~~during a residence in~~ a time of between 4 and 24 hours.

14(Currently amended). Process according to ~~any of claims~~ claim 1 to 13, in which the production crude is a complex crude, ~~preferably a naphthenic crude.~~

15(Currently amended). Apparatus for the treatment of production crude comprising:

(a) a unit (102; 108) for separation of the crude into ~~two phases~~, gas and degassed emulsion phases, and

(b) a vessel (112) for separating the said degassed emulsion into water and oil,

in which the separating tank (112) does not include recovery of a flow from the emulsion interface.

16(Original). Apparatus according to claim 15, in which the vessel (112) comprises a spray or water distribution system (115) for washing the said emulsion with water at the oil/water interface.

17(Original). Apparatus according to claim 16, in which the spray or wash water distribution system (115) comprises a plurality of pipes (121a, 121b, 121c) connected together in the form of a manifold.

18 (Currently amended). Apparatus according to ~~any one of claims~~ claim 15 to 17, also comprising a distributor (116) for stripping gas at the bottom of the vessel (112).

19(Currently amended). Apparatus according to ~~any of claims~~ claim 15 to 18, also comprising a spray or water distribution system (117) for washing the said emulsion with water at the gas/oil interface.

20(Currently amended). Apparatus according to ~~any of claims~~ claim 15 to 19, also comprising a settler (114) downstream from the vessel (112).

21(Original). Apparatus according to claim 15, in which said vessel comprises a settler for settling the degassed emulsion.

22(Currently amended). Apparatus according to ~~any of claims~~ claim 15 to 19, in which said vessel comprises a feed (III) for said degassed emulsion at the bottom of said vessel.

23(Currently amended). Apparatus according to claim 22, which comprises a water leg from 3 to 15 meters, ~~preferably from 4 to 12 meters.~~

24(Currently amended). Apparatus according to claim 22 ~~or 23~~, comprising a water make-up device upstream of the feed (111).

25(Currently amended). Apparatus according to ~~any of claims claim~~ 15 to 24, comprising a high or medium pressure separator (102) and a low pressure separator (108).

26(Canceled).

27(Currently amended). Ship or barge comprising the apparatus according to ~~any of claims claim~~ 15 to 26, the separation unit (102; 108) being on the topsides while the vessel (112) or settler is in the hull.

28(Original). Process for the separation of a water-in-oil hydrocarbon emulsion comprising the following stages:

- (i) creation of an oil/water interface,
- (ii) washing the said emulsion with water at the oil/water interface, and
- (iii) recovery of a flow of oil and a flow of water.

29(Original). Process according to claim 28, in which stage (iii) is implemented without recovering a flow from the emulsion interface.

30(Currently amended). Process according to claim 28 ~~or 29~~, also comprising a stage (iv) of stripping with gas, ~~preferably an acid gas~~.

31(Currently amended). Process according to ~~any of claims claim~~ 28 to 30, also comprising a stage (v) of washing the said emulsion at the gas/oil interface.

32(Currently amended). Process according to ~~any of claims claim~~ 28 to 31, also comprising a stage (vi) of settling the fluid from stage (iii).

33(Currently amended). Process according to ~~any of claims claim~~ 29 to 32, in which stage (i) comprises a stage of passing the degassed emulsion to the bottom of a washing vessel.

34(Currently amended). Process according to claim 33, which comprises using a water leg comprised from 3 to 15 meters, ~~preferably from 4 to 12 meters.~~

35(Currently amended). Process according to claim 33 ~~or 34~~, in which the degassed emulsion has a water content from 15 to 35 vol%.

36(Original). Process for the separation of a water-in-oil hydrocarbon emulsion comprising the following stages:

- (i) passing the degassed emulsion to the bottom of a washing vessel, and
- (ii) recovery of a flow of oil and a flow of water.

37(Currently amended). Process according to claim 36, which comprises using a water leg comprised from 3 to 15 meters, ~~preferably from 4 to 12 meters.~~

38(Currently amended). Process according to claim 36 ~~or 37~~, in which the degassed emulsion has a water content from 15 to 35 vol%.

39(Currently amended). Process according to ~~any of claims~~ claim 36 ~~to 38~~, in which stage (ii) is implemented without recovering a flow from the emulsion interface.

40(Currently amended). Process according to ~~a any of claims~~ claim 36 ~~to 39~~, also comprising a stage (vi) of settling the fluid from stage (ii).

41(Original). Apparatus for the separation of a water-in-oil hydrocarbon emulsion comprising a vessel (112) fitted with a spray or water distribution system (115) for washing the said emulsion with water at the oil/water interface.

42(Original). Apparatus according to claim 41, in which the spray or wash water distribution system (115) comprises a plurality of pipes (121a, 121b, 121c) connected together in a manifold arrangement.

43(Currently amended). Apparatus according to claim 41 ~~or 42~~, also comprising a distributor (116) for stripping gas at the bottom of the vessel (112).

44(Currently amended). Apparatus according to ~~any of claims claim 41 to 43~~, also comprising a spray or water distribution system (117) for washing the said emulsion with water at the gas/oil interface.

45(Currently amended). Apparatus according to ~~any of claims claim 41 to 44~~, also comprising a settler (114) downstream from the vessel (112).

46(Currently amended). Apparatus according to ~~any of claims claim 41 to 45~~, also comprising a vessel (112) fitted with a feed (111) for said emulsion at the bottom of said vessel.

47(Original). Apparatus for the separation of a water-in-oil hydrocarbon emulsion comprising a vessel (112) fitted with a feed (111) for said emulsion at the bottom of said vessel, and further comprising downstream of said vessel (112) a settler (114).

48(Currently amended). Apparatus according to claim 47, which comprises a water leg from 3 to 15 meters, ~~preferably from 4 to 12 meters~~.

49(Currently amended). Apparatus according to claim 47 ~~or 48~~, comprising a water make-up device upstream of the feed (111).

50 – 51 (Canceled).

52(Currently amended). Ship or barge comprising the apparatus according to ~~any of claims claim 41 to 51~~ in the hull.